ST LUKE'S CHURCH SCHOOL

Design Technology Curriculum

Year 1 to Year 6

Autumn 2

Design Technology Overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS (Expressive Arts)	Junk Modelling		Bookmarks		Design & Make A Rainbow Salad	
Year 1	Eat More Fruits and Vegetables		Stable Structures			Moving Mini Beasts
Year 2	Puppets		Vehicles			Perfect Pizzas
Year 3		Story books		Pencil Cases		sMini Castles
Year 4		Seasonal Stockings		Torches		Seasonal Food
Year 5	Building Bridges		Fashion and textiles (bags)		Slingshot Car	
Year 6	Programming Pioneers		Birdhouse Builders		Burgers	

Cookery Textiles Structures Electronics Mechanisms

The Aims of the National Curriculum for Design and Technology

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

Intent

Through high-quality design and technology teaching, our pupils will acquire a broad range of subject knowledge, which is developed each year from Reception through to Year 6. Our pupils will be inspired to use their creativity and imagination to design, make and evaluate within a variety of contexts. Through disciplines such as mathematics, science, engineering, computing and art, our pupils will solve real and relevant problems whilst taking risks and being resourceful. Our innovative projects will ensure that our pupils become citizens capable of contributing to the creativity, culture, wealth and well-being of the nation, whilst displaying a critical understanding of design and technology through history to the present day.

Implementation

The St.Luke's Design and Technology curriculum takes influences from planning provided by Plan Bee and Kapow as this serves to support non-specialists while providing the backbone to an ambitious curriculum. We have taken the planning to form the basis of a curriculum which has been uniquely developed for us. Each year our pupils will refine the necessary skills to become capable citizens in design and technology, carefully developing these skills each year as they progress through school. In order to develop a critical understanding of the history of the subject, our curriculum has incorporated the teaching of some of the world's most influential people, as well as including some individuals from closer to home.

Reception

For further information about the knowledge content taught in Reception please refer to the separate EYFS curriculum document.

Autumn 2 Year 3	Focus of Study: Mechanisms: Story books
NC Objectives	Key Knowledge and Vocabulary
Designing • Use research and develop design to make appealing products that are fit for purpose and aimed at a particular group *Making* • select from and use a range of tools and equipment to perform practical tasks (cut, slice, pierce) • select from and use a wider range of materials and components (pivot, rotate, lever and linkage) *Evaluating* • investigate and analyse a range of existing products • evaluate their ideas and products against their own design criteria and consider views of others to improve their work *Technical knowledge and understanding* • understand and use mechanical systems in their products (pivots, rotation, levers and linkages)	Context for study: This unit follows on from two precursor units (Moving Mini Beasts Year 1 and Vehicles Year 2). It is followed by the Year 5 Slingshot Car unit where the children will learn about axels, chassis and launch mechanisms. The children will have already used a sliding mechanism, wheel mechanism, lever and pivot. They will extend their existing knowledge to include concertina, pop-up objects and window flaps. Knowledge Content: To know some techniques to create moving parts in a pop-up story book. To know that different fonts and graphics make covers look good and entice people to read the book. Technical knowledge Pivot- A pivot is a point that something turns around. The centre of a merry-go-round is a pivot.

Rotate- Rotate means to turn something around an axis or centre. Clock hands rotate around the centre of the clock.

Lever- A lever is a bar or rod that when pushed or pulled causes something else to move. A door handle is a lever.

Linkage- A linkage system is a series of bars, rods or springs that cause something else to move. A jack-in-the-box has a linkage system.

Evaluate existing products:

- What materials have they used for the mechanism?
- Which part is moving and why?
- How have they made it move?

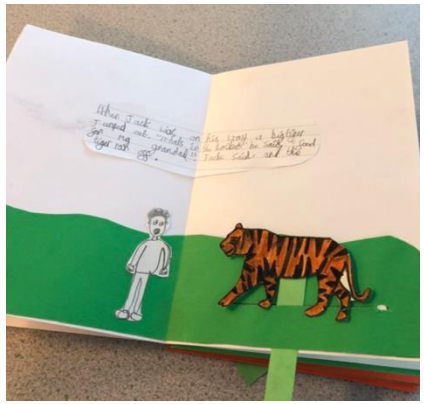
Robert Sabuda is a children's pop-up book artist and paper engineer. His recent books include retellings of stories of The Wonderful Wizard of Oz and Alice in Wonderland. His specific interest is in 3D paper engineering. He is a multiple No.1 New York Times best-selling children's book creator and has over five million books in print published in over 25 languages.

	Evaluating products: When evaluating existing products, look at the moving mechanisms in a story book. Sketch and label the picture, then design a similar mechanism to suit a different story e.g. Little Red Riding Hood, Goldilocks or Jack and the Beanstalk.

	Children to peer evaluate at the end when they have a final product: • What is good about the storybook? • What do you think of the mechanisms? • Do the mechanisms fit the purpose? • Is the storybook suitable for the intended audience? • What could be made better? Vocabulary (Know and understand the meaning of these words and how to use them). Pivot- A pivot is a point that something turns around. The centre of a merry-go-round is a pivot. Rotate- Rotate means to turn something around an axis or centre. Clock hands rotate around the centre of the clock. Lever- A lever is a bar or rod that when pushed or pulled causes something else to move. A door handle is a lever. Linkage- A linkage system is a series of bars, rods or springs that cause something else to move. A jack-in-the-box has a linkage system. Designing: It is important to make sure that you match the font you use to the subject of the book. You may also use lots of different techniques to colour in fonts too e.g. stripes, cross-hatching, dots and patterns.

Think about:

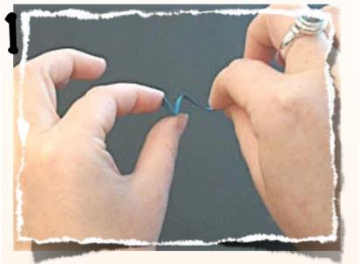
- What story will you use? Will it be a story you know or a new one you will write?
- How will you bind the pages of your book together? To make the design process easier, the children should all bind their books the same way. The book should be made from 4x (max) pieces of folded card that are glued together. See image.
- Which fonts will you use?
- What mechanisms could you use to fit in well with your story?
- Who will your book be for?

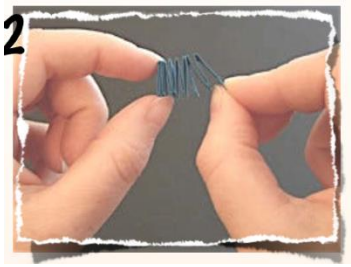


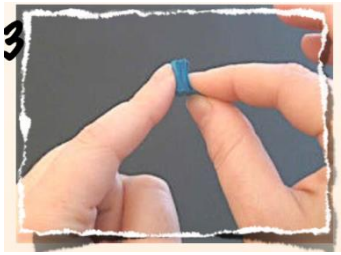
Making:

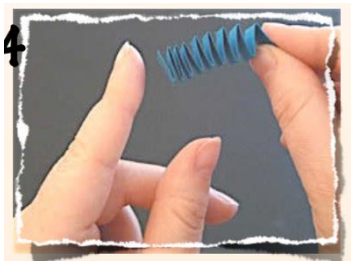
Practising the below skills will support children in being able to make their own pop-up story books:

1. Paper concertina: Take a long strip of paper or card and fold it into squares folding first one way and then the other. Keep going until you have folded the entire strip. Push the folds together. When the book opens, the concertina will spring out. You can stick objects to the end to jump out at the reader as they open the page.

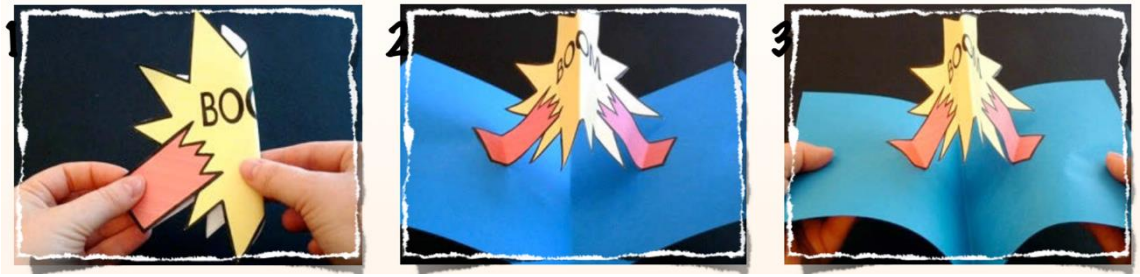






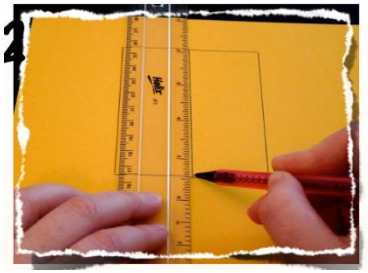


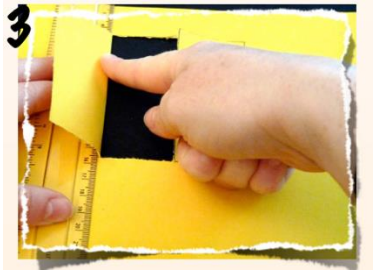
2. **Pop-up object:** Fold the object you would like to pop out in half. Stick the two ends of the object between two pages of the book. Remember not to stick your object down flat. Make sure the object folds correctly so you can't see it when the pages are closed. When you open up the page, the object will pop out.

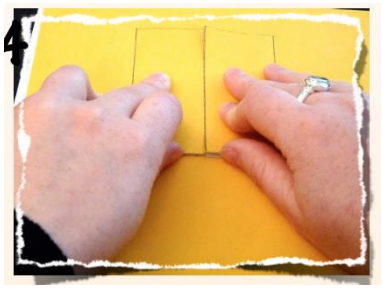


3. **Window flaps:** Draw and measure a box around the picture you would like to appear behind the window. Draw a box the same size on a separate piece of card and draw

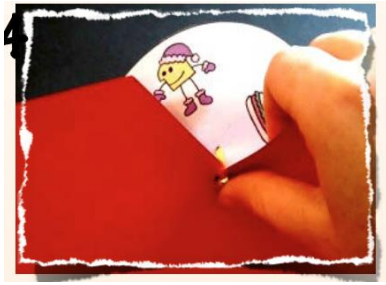
a line down the middle where you want the window to open. Carefully cut the top, bottom and middle lines with a craft knife or scissors, then fold back the left and right lines. Place the window card over the picture, making sure you line them up properly. Open the window flaps to reveal the picture inside.

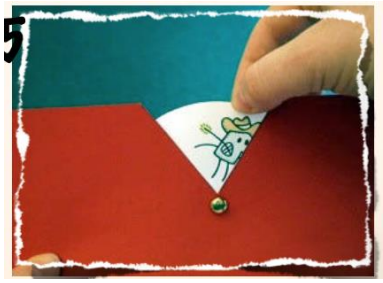




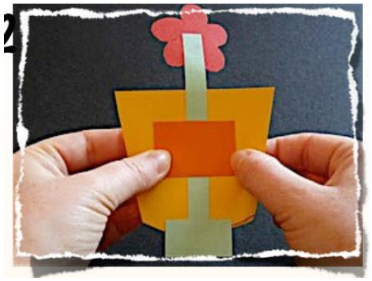


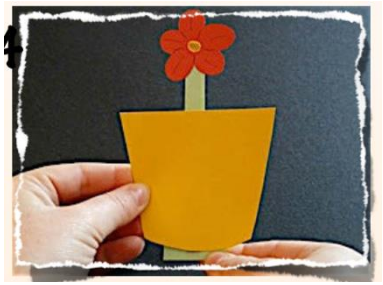
4. **Rotating wheels:** Draw some pictures on a wheel, making sure that the pictures will all be the right way round when the circle is turned. On a separate piece of card, cut out a window. They can be at the edge of the card or in the middle. Pierce a hole in the centre of the wheel. Place a blob of blu-tack or plasticine underneath then pierce it with a sharp pencil. Pierce another hole on the card then put a split-pin through both holes, opening out the pin at the back. Now turn your wheel to reveal each of the different pictures.





5. **Lever:** Stick a strip of card with a tab at the end to the object you want to be moved. Attach it using another strip of card stuck by both edges so the lever can still move. Pull the lever down when you want to hide the object. Push the lever up when you want to reveal the object.





6. Once designed and the children have practised all of the above skills, they will be able to make their pop-up storybook. This should be made of a maximum of 4 pieces of coloured card that are glued to bind the book. Binding should be the final step so that the children can manipulate the card to include their moving mechanisms.

Health and Safety:

- Some children may require support with cutting out areas of card e.g. piercing scissors through.
- Ensure split pins are split and flattened.

Other tips:

- Glue the pages together at the end so that the children can manipulate each page e.g. piercing and attaching levers etc…

Resources needed:

A range of coloured cards, coloured felt tips, split pins, scissors and glue sticks.

Outcome:

To produce a pop-up book which entices the reader.

Autumn 2 Year 4	Focus of Study: Textiles: Seasonal stockings
NC Objectives	Key Knowledge and Vocabulary
Designing • Generate, develop and communicate ideas through pattern pieces *Making* • select from and use a wider range of materials and textiles, according to their functional properties and aesthetic qualities • select from and use a wider range of tools and equipment to perform practical tasks (overstitch and applique) *Evaluating* • analyse a range of existing products; • evaluate their ideas and products against their own design criteria	Context for study: This unit follows on from learning in Year 2 where children will have experience of making a felt puppet. The children will have learnt to thread a needle, tie a knot, used a running stitch and fastened a button onto their puppet. This unit is the first where the children will be involved in the design process and will progress their sewing knowledge to be able to complete an overstitch. They will also use simple applique and add padding to the applique to create a 3D effect. The children will evaluate against a design criteria. Following this unit, in Year 5 the children will design and make a bag. They will further extend their knowledge to be able to back stitch and create a drawstring element. Knowledge Content: To know where, when and why Christmas stockings were first used. • A Christmas stocking is an empty sock-shaped bag that is hung on Christmas Eve. It is filled with small toys, sweets, fruit, coins or other small gifts when Father Christmas/ Saint Nicholas arrives. • It is thought that the Christmas stocking originated from the life of Saint Nicholas. Tradition in Western culture threatens that a child who behaves badly will receive only a piece of coal in their stocking.

- The folk tale involves Saint Nicholas and a struggling family. A nobleman's wife died leaving him penniless and the sole parent to three daughters. The nobleman worried that nobody would wish to marry his daughters without a sizeable dowry. Hearing of the Father's worries, Saint Nicholas came to their home and filled the girls' stockings, which were hanging above the fireplace to dry, with solid gold spheres so that they could marry after all.

To design your own final product and create a simple flow chart to show the method.

Evaluating products:

To evaluate existing products.

- Are the existing products well made? Are they sturdy?
- Do the existing products have an element of applique?

	• Do they include an appropriate Christmas design in appropriate Christmas colours? • Do the stockings have a hanging element? Technical knowledge • An overstitch can be used to sew two pieces of fabric together or to applique. It is also frequently used to sew a seam. • Applique is used to apply something to a larger surface (such as a decoration). Vocabulary (Know and understand the meaning of these words and how to use them). Overstitch, applique Designing: Making Part 1: Practising skills To develop skills to be able to use an overstitch and applique.

Practise an overstitch:

- Thread the needle and make a secure knot in the end of the thread.
- Come up through the fabric from back to front. Hide the knot between the two layers of fabric.
- Bring the needle through the fabric from back to front again. With each stitch, the needle should always come through in the same direction.
- Pull each stitch so the thread is right at the fabric edge, but not pulling it down tight.
- Keep stitch spacing even so that it looks neat and uniform.

Practice appliqueing a simple shape onto the fabric:

- Choose a simple design such as a star or Christmas tree and cut out the shape in fabric.
- Place the shape on top of your piece of fabric.
- You can use a simple running stitch or an overstitch to applique your design (practised in previous step. Running stitch learnt in Year 2 puppet unit).
- Leave a small gap and fill the shape with cotton wool/ excess felt to create a 3D effect. Stitch up the remaining gap.
- When you have stitched the whole way around, make sure tie a knot to finish before cutting off excess threads.

Making Part 2: The Christmas Stocking

- The children should all have access to the stocking template to cut around on their fabric.

	• Use the overstitch practised in the previous steps to stitch around the edge of the two pieces. Explain to children why it is important that they don't stitch the top edge, so that the stocking has an opening. • Children to choose and cut out a Christmas related pattern for their applique. • Use either a running stitch or overstitch to applique the design. Fill with cotton wool or excess felt to create the 3D effect. Sew up the remaining gap and tie the knot securely. • Create a loop shape with some ribbon and attach on the top, inside edge so that the stocking can be hung. Evaluating Products: Apply the same criteria to the evaluation which was used with the existing products. Health and Safety: • Ensure children are seated when using needles and scissors. Other tips: For children who are struggling to cut the felt fabric, give support where needed. Remind children to stay seated when using a needle. If leaving their seat, secure the needle in the fabric so that they know where it is. A self-threading needle may be used if children are continuously struggling to thread their own needle. Resources needed:

	Stocking templates, felt, embroidery threads, needles, cotton wool, existing stockings for evaluation. Outcome: To know why stockings are traditionally used at Christmas time. To design and make a stocking suitable for use using an overstitch and element of applique. Videos: Overstitch https://youtu.be/gmD9vpo5Fso?list=PL2vt_TPKQbZpAuVKmMVKmKID239UwrydL